Author Index

Sewage Works Journal, Volume X, 1938

ARTICLES

Adams, G. O. See Edwards, G. P.
AGAR, CHARLES, C. Practical Methods of Preventing Dairy Waste Nuisance... 115
ALLEN, WILLIAM A. Conditioning and Sale of Sludge for Fertilizer..... 945
ANDERSEN, C. G. Sludge Digestion and Inspection of Tanks in Rockville Centre, N. Y..... 494
APPEL, GEORGE F. BAER. Some of the Legal Aspects of Financing Sewerage Projects in Pennsylvania Municipalities. 839

Baity, H. G. Some Factors Affecting the Aerobic Decomposition of Sewage Sludge Deposits..... 539
BLOODGOOD, DON E.
Biologic Oxidation..... 927
Studies of Activated Sludge Oxidation at Indianapolis..... 26
BUCKLEY, HOMER. Legal Aspects of Sewer Rental Laws and Connections from Outside to City Sewer Systems..... 980
BUCKLEY, WM. License Fees for High-Rate Filters..... 713
BUDD, CHESTER B. See Flower, G. E.
BUTTERFIELD, C. T. See Ruchhoft, C. C.
BUTTERFIELD, C. T., AND WATTIE, ELSIE. Studies of Sewage Purification. VIII. Observations on the Effect of Variations in the Initial Numbers of Bacteria and of the Dispersion of Sludge Flocs on the Course of Oxidation of Organic Matter by Bacteria in Pure Culture..... 815

Carpenter, Lewis V. Sludge Drying on Open and Covered Drying Beds..... 503
CHESLEY, A. J. (M.D.), AND HARPER, C. A. (M.D.). Joint Statement of Policy Involving Projects for Sewage Treatment Plants in Which High-Rate Filters are Used..... 711
COHN, MORRIS M. The Disposal of Sewage and Garbage—Related Municipal Functions..... 81

Dappert, Anselmo F. Administration of New York State Requirements Relative to Qualifications of Sewage Treatment Plant Operators..... 988
DODGE, HARLAND P. Experiences and Results of First Year of Operation of the Ann Arbor Sewage Treatment Plant. 523
DONALDSON, WELLINGTON, AND LIEBMAN, HENRY. Utilization of Sludge Digestion Gases at the Coney Island Sewage Treatment Works..... 301

Edwards, G. P., and Adams, G. O. Experimental High-Rate Trickling Filters..... 700
EHLERS, RALPH B. See Harlow, Ivan F.
ENSLOW, LINN H., AND FABER, HARRY A. Aspects of Sewage Chlorination in 1937..... 74
ERNSBERGER, R. P. See Trebler, H. A.

Faber, Harry A. See Enslow, Linn H.
FLOWER, G. E., BUDD, CHESTER B., AND HAUCK, CHARLES.
Effects of Activated Carbon in the Digestion of Fresh Solids—Activated Sludge Mixtures..... 441
Sludge Drying on Glass-Covered Beds.. 714

Gascoigne, George B. Better Sewage Works..... 293
GEHM, HARRY W.
Chemical Coagulation of Sewage. X. Effect of Non-Settleable Solids on the Coagulant Demand..... 939
See Rudolfs, Willem.
GREENE, R. A. See Jackson, R. B.
GRIFFIN, C. B. See Hedgepeth, L. L.

Hajna, A. A., and Perry, C. A. A Modified Eijkman Medium for the Isolation of *Escherichia coli* from Sewage..... 261
HARLOW, IVAN F., POWERS, THOMAS J., AND EHLERS, RALPH B. The Phenolic Waste Treatment Plant of the Dow Chemical Company.....1043
HARPER, C. A. (M.D.). See Chesley, A. J. (M.D.).
HASELTINE, T. R. The Use of Hydrated Lime in the Activated Sludge Process. 1017
HATFIELD, W. D.
The Viscosity or Pseudo-Plastic Properties of Sewage Sludges..... 3
II. The Pseudo-Plastic Properties of Sewage Sludges..... 272
HAUCK, CHARLES, See Flower, G. E.
HEDGEPETH, L. L., AND GRIFFIN, C. B. Textile Waste Disposal. An Orderly Approach to the Problem..... 534
HEINEMANN, BERNARD. See Rudolfs, Willem.
HENKEL, GEORGE E. The Handling and Feeding of Chlorine at the Jamaica, N. Y., Screening Plant..... 311
HERRICK, T. L. Experimental Work in Progress at the West Side Sewage Treatment Works of The Sanitary District of Chicago..... 276
HEUKELEKIAN, H. See Rudolfs, Willem.
HEUKELEKIAN, H., AND INGOLS, R. S.
Studies on the Clarification Stage of the Activated Sludge Process. VI. Hydrolysis of Starch by Activated Sludge 209
VII. Hydrolysis and Bacterial Utilization of Complex Nitrogenous Materials by Activated Sludge..... 219
HEUKELEKIAN, H., AND SCHULHOFF, H. B. Studies on the Clarification Stage of

960637

the Activated Sludge Process. IV. Preliminary Notes on the Clarifying Organisms in Activated Sludge..... 43
HOLDERBY, J. M. Results of First Nine Months' Operation at Neenah-Menasha..... 975
HOUSER, PAUL J. Hazards and Safety Measures at Sewage Works..... 731
HURWITZ, E.
Laboratory Analyses and Studies in Plant Operation..... 722
Recent Laboratories for Large Sewage Treatment Works..... 60
HUTTON, H. S. Discussion of Paper "Aspects of Sewage Chlorination in 1937" by Linn H. Enslow and Harry A. Faber..... 319

Imhoff, Karl. The Design of High-Rate Trickling Filters..... 705
INGOLS, ROBERT S.
Studies on the Clarification Stage of the Activated Sludge Process.
V. Ammonia Uptake..... 49
VIII. Uptake of Soluble Organic Substances..... 458
See Heukelekian, H.

Jackson, R. B., and Greene, R. A. Jackson, Michigan, Sewage Plant Operation..... 513

Kappe, S. E. Résumé of Operating Experience of Mechanical Surface Aeration.....1007
KEEFER, C. E., AND KRATZ, HERMAN, JR. Comparative Effects of Activated Carbon and Lime on Sludge Digestion 33
KEHR, ROBERT W. Measures of Natural Oxidation in Polluted Streams. IV. Effect of Sewage on Atmospheric Reaeration Rates under Stream Flow Conditions..... 228
KLASSEN, CLARENCE W. See Wisely, W. H.
KNECHTGES, O. J. A Study of Trickling Filter Loadings..... 936
KRATZ, HERMAN, Jr. See Keefer, C. E.

Liebman, Henry. See Donaldson, Wellington.

McLachlan, J. A. See Wilson, H.
McNAMEE, P. D. See Ruchhoft, C. C.
MILES, HENRY J., AND PORGES, RALPH. Treatment of Sulfur Dye Waste by the Activated Sludge Process 322
II. Further Studies of Optimum Operating Conditions..... 856
MILLING, MARTIN A., AND POOLE, B. A. Disposal of Packinghouse Waste. The Kuhner Packing Company, Muncie, Indiana..... 738
MOORE, W. ALLAN. The Solubility of Atmospheric Oxygen in Sewage..... 241

Owen, Mark B. Developments in Sewage Sludge Incineration..... 100

Perry, C. A. See Hajna, A. A.
PHELPS, EARLE B., *et al.* Research in Sewage Chemistry, Sewage Treatment and Stream Pollution. A Critical Review of the Literature of 1937..... 173
POMEROY, RICHARD. Influence of Oxygen Concentration on B.O.D..... 465
POOLE, B. A. See Milling, Martin A.
PORGES, RALPH. See Miles, Henry J.
POWERS, THOMAS J. See Harlow, Ivan F.

Roe, Frank C. Activated Sludge—The Case for Air Diffusion..... 999
ROLAND, C. T. See Trebler, H. A.
RUCHHOFT, C. C. The Biochemical Oxygen Demand Test and Oxidation in Sewage Treatment..... 264
RUCHHOFT, C. C., MCNAMEE, P. D., AND BUTTERFIELD, C. T. Studies of Sewage Purification. VII. Biochemical Oxidation by Activated Sludge..... 661
RUDOLFS, WILLEM, AND GEHM, HARRY W. Chemical Coagulation of Sewage. IX. Order of Addition of Chemicals..... 450
RUDOLFS, WILLEM, AND HEINEMANN, BERNARD. Growth Promoting Substances in Sewage and Sludge. I. Review of Literature..... 643
RUDOLFS, WILLEM, AND HEUKELEKIAN, H. Discussion of Paper by Richard Pomeroy on "Influence of Oxygen Concentration on B.O.D."..... 472
RUDOLFS, WILLEM, AND INGOLS, R. S. Growth Promoting Substances in Sewage and Sludge. II. Indole and Skatole 653

Sandenburgh, George H. Sewer Rental Laws in Michigan..... 482
SCHULHOFF, H. B. See Heukelekian, H.
SCOTT, W. J. Discussion of Paper "Administration of New York State Requirements Relative to Qualifications of Sewage Plant Operators" by Anselmo F. Dappert..... 997
SIEBERT, CHRISTIAN L. Discussion of Paper "Dairy Waste Elimination and Sewage Disposal" by H. A. Trebler, R. P. Ernsberger and C. T. Roland..... 887
STREANDER, PHILIP B. Chemical Treatment of Sewage..... 91
STREETER, H. W. Natural Stream Purification as Applied to Practical Measures of Stream Pollution Control 747

Trebler, H. A., Ernsberger, R. P., and Roland, C. T. Dairy Waste Elimination and Sewage Disposal..... 868

Van Kleeck, LeRoy. Vacuum Filtration of Sludge..... 949

Waterman, Earle L. Sewage Treatment at Iowa City, Iowa..... 106
WATTIE, ELSIE. See Butterfield, C. T.
WELCH, PIERRE W. Digestion Experiments at Flint, Michigan, on Sewage Sludge, Garbage and Lime Sludge Mixtures.. 247
WILSON, H., AND MCLACHLAN, J. A. Carbon Dioxide Production in the Activated Sludge Process..... 691
WISELY, W. H., AND KLASSEN, CLARENCE W. The Pollution and Natural Purification of the Illinois River Below Peoria..... 569

OPERATORS' REPORTS AND SUGGESTIONS

Barker, S. T. Remarks at the New York State Sewage Works Association's Annual Operator's Award, 1938..... 754
BLOODGOOD, DON E.
Metal Container for Settleable Solids Tube..... 341
See Calvert, C. K.
BROOKS, JOHN H. Worcester Sewage Treatment Works. Annual Report, 1937–38. 1075

Calvert, C. K., and Bloodgood, D. E. Excerpts from 1936 Annual Report of Sewage Disposal, Board of Public Works and Sanitation, City of Indianapolis, Indiana..... 137
CORRAO, JOSEPH. Experience with Paints at the Marina Sewage Disposal Plant 899

Dappert, Anselmo F. Qualifications Prescribed for Sewage Treatment Plant Operators in New York State..... 336
DUBOIS, ISADORE J. Sewage Flow Velocity Meter..... 340

Hall, Frank A. The Mineola Sewage Treatment Plant..... 602
HENN, DONALD E. De Kalb Sanitary District, DeKalb, Illinois..... 596

Johnson, Herbert O. Separate Sludge Digestion in Heated Tanks..... 149
JONES, FRANK W. Starting a New Sewage Plant..... 1060

Kramer, Harry. B.O.D. Table Tops.... 342

Larson, Carl C. Springfield Sanitary District, Springfield, Illinois..... 781
LEWIS, JOHN V. Maintenance of Pumping Stations and Force Mains..... 343

Marshall, Elvey A.
Gulvin Park Sewage Treatment Plant, Geneva, N. Y..... 756
Operation of Covered Sludge Beds..... 158

Ryan, William A. Operation of Open Sludge Beds..... 153

Samson, Channel. Operation of Imhoff Tanks..... 143
SMITH, L. R. Separate Sludge Digestion Without Heat..... 146
SNELL, J. R. Automatic Shut-off for Gas Still (Used for Volatile Acids or Nitrogen Distillations)..... 890
SPERRY, W. A.
Cork Boring Gadget..... 342
Periscope..... 341
Thermometer Gadget for Use in Digesters..... 895
SZYMANSKI, JOHN R. Annual Report of the Superintendent of the Sewage Treatment Plant of the City of New Britain, Connecticut, for the Year Ending March 31, 1938..... 770

Tennant, Carl F. Paint Pointers..... 897

West, Leslie E. Elizabeth, N. J., Joint Meeting Sewage Treatment Plant. First Report..... 1067
WISELY, W. H.
Intermittent Sand Filtration..... 1065
Primary Sludge Pumping..... 891
WITTWER, NORMAN C. Rahway Valley, New Jersey, Joint Meeting Sewage Treatment Works..... 606
WOODWARD, R. D. Operating Results at the Laguna Beach Sewage Disposal Plant..... 893

REVIEWS AND ABSTRACTS

Banta, A. Perry. See Rawn, A. M.
BRANDT, H. J. The Determination of Oxygen in Water in the Presence of Nitrite..... 377
BUTCHER, R. W., LONGWELL, J., AND PENTELOW, F. T. K. Survey of the River Tees. Part III. The Non-Tidal Reaches-Chemical and Biological.... 638

Eldridge, E. F.
B.O.D. of Industrial Wastes, The—.... 913
Continuation of the Study of Beet Sugar Factory Waste Treatment.... 413
Experiences with Special Cannery Wastes (Beets, Tomatoes, and Squash) 914
EMMEL, VICTOR M. See Rakestraw, Norris W.
ESCRITT, L. L. Constant Velocity Detritus Channels. Recent Developments in Details of Design..... 1101
Sludge Digestion Tanks. Methods and Principles Used in Design..... 1102

Freese, S. W. Aeration Tanks for Activated Sludge Plants..... 375

Garner, John. West Riding of Yorkshire Rivers Board. Forty-Third Report, Year Ending March 31, 1938..... 1094
GOLDTHORPE, H. H. Experimental Rapid Filtration at Huddersfield..... 622

Hamlin, E. J., and Wilson, H. Ventilation of Percolation Filters..... 368
HODGE, WILLARD W. Pollution of Streams by Coal Mine Drainage..... 168
HOLDEN, G. Storm Water Overflow Chambers..... 801
HUBBELL, GEORGE E. Grit Chamber Model Tests for Detroit, Mich., Sewage Treatment Project..... 372
HUNTER, ALEXANDER.
Glasgow Sewage Purification Works. Annual Report, 1937–38..... 1098
Sewage Purification Department, Glasgow, Scotland, 1894–1937..... 917
HURLEY, JOHN. Some Factors Affecting the Design of Sewage Disposal Works. 1096
HURLEY, J., AND WINDRIDGE, M. E. D. Enclosed Aerated Filters..... 804

Lloyd, P. G. Efficiency of Humus Settling Tanks..... 163
LONGWELL, J. See Butcher, R. W.

Oeming, L. F. Progress Made in Michigan in the Elimination of Stream

Pollution by Industrial Wastes Since 1929 915
OSLER, RICHARD H. Concrete and Its Uses in Sewage Disposal Works 164

Pentelow, F. T. K. See Butcher, R. W.
POMEROY, RICHARD. See Rawn, A. M.
PROCTER, J. W. See Thompson, J. T.
PRÜSS, MAX. Annual Report of the Ruhrverband for 1937 1100

Rakestraw, Norris W., and Emmel, Victor M. The Determination of Dissolved Nitrogen in Water 167
RAWN, A. M., BANTA, A. PERRY, AND POMEROY, RICHARD. Multiple-Stage Sewage Sludge Digestion 625
RUDOLFS, WILLEM. Stabilization of Sewage Sludge Banks 636

Schlenz, H. E. Standard Practice in Separate Sludge Digestion 373
SHENTON, H. C. The Occurrence of Dilute Sewage and Its Rational Treatment. 163
SNELL, FOSTER DEE. Treatment of Rayon Boil-Off Waste 166

Thompson, J. T., and Procter, J. W. Filter Pressing of Sludge 633
TOWNEND, C. B. The Elimination of the Detritus Dump 369

Vokes, Frank Charles. The Design and Operation of the Coleshill Sewage Disposal Works of the Birmingham, Tame, and Rea District Drainage Board 631

Wilson, H. See Hamlin, E. J.
WINDRIDGE, M. E. D. See Hurley, J.

Subject Index

Sewage Works Journal, Volume X, 1938

ARTICLES

Activated Sludge
Biologic Oxidation. *Don E. Bloodgood*.. 927
Carbon Dioxide Production in the Activated Sludge Process. *H. Wilson and J. A. McLachlan*..... 691
Case for Air Diffusion, The —. *Frank C. Roe*..... 999
Resume of Operating Experience of Mechanical Surface Aeration. *S. E. Kappe*.....1007
Studies of Activated Sludge Oxidation at Indianapolis. *Don E. Bloodgood*... 26
Studies of Sewage Purification. VII. Biochemical Oxidation by Activated Sludge. *C. C. Ruchhoft, P. D. McNamee and C. T. Butterfield*..... 661
Studies on the Clarification Stage of the Activated Sludge Process.
IV. Preliminary Notes on the Clarifying Organisms in Activated Sludge. *H. Heukelekian and H. B. Schulhoff* 43
V. Ammonia Uptake. *R. S. Ingols*... 49
VI. Hydrolysis of Starch by Activated Sludge. *H. Heukelekian and R. S. Ingols*..... 209
VII. Hydrolysis and Bacterial Utilization of Complex Nitrogenous Materials by Activated Sludge, *H. Heukelekian and R. S. Ingols*..... 219
VIII. Uptake of Soluble Organic Substances. *Robert S. Ingols*..... 458
Treatment of Sulfur Dye Waste by the Activated Sludge Process. *Henry J. Miles and Ralph Porges*..... 322
II. Further Studies of Optimum Operating Conditions. *Henry J. Miles and Ralph Porges*..... 856
Use of Hydrated Lime in the Activated Sludge Process. *T. R. Haseltine*.....1017
Administration of New York State Requirements Relative to Qualifications of Sewage Treatment Plant Operators. *Anselmo F. Dappert*. Discussion by *W. J. Scott*..... 997
Air Diffusion, Activated Sludge—The Case for—. *Frank C. Roe*..... 999
Ann Arbor Sewage Treatment Plant, Experiences and Results of First Year of Operation of the—. *Harland P. Dodge*..... 523
Aspects of Sewage Chlorination in 1937. *Linn H. Enslow and Harry A. Faber*. 74
Discussion. *H. S. Hutton*..... 319

Better Sewage Works. *George B. Gascoigne* 293
Biochemical Oxygen Demand
B.O.D. Test and Oxidation in Sewage Treatment. *C. C. Ruchhoft*..... 264
Influence of Oxygen Concentration on B.O.D. *Richard Pomeroy*. Discussion by *W. Rudolfs and H. Heukelekian*... 465
Biologic Oxidation. *Don E. Bloodgood*.... 927

Carbon Dioxide Production in the Activated Sludge Process. *H. Wilson and J. A. McLachlan*..... 691
Chemical Coagulation of Sewage.
IX. Order of Addition of Chemicals. *Willem Rudolfs and Harry W. Gehm*.. 450
X. Effect of Non-Settleable Solids on the Coagulant Demand. *Harry W. Gehm*. 939
Chemical Treatment of Sewage. *Philip B. Streander*..... 91
Chicago, The Sanitary District of—, Experimental Work in Progress at the West Side Treatment Works. *T. L. Herrick*..... 276
Chlorination
Aspects of Sewage Chlorination in 1937. *Linn H. Enslow and Harry A. Faber*.. 74
Discussion. *H. H. Hutton*..... 319
Chlorine
Handling and Feeding of Chlorine at the Jamaica, N. Y., Screening Plant, The—. *George E. Henkel*..... 311
Comparative Effects of Activated Carbon and Lime on Sludge Digestion. *C. E. Keefer and Herman Kratz, Jr.*..... 33
Conditioning and Sale of Sludge for Fertilizer. *William A. Allen*..... 945
Coney Island Sewage Treatment Works, Utilization of Sludge Digestion Gases at the—. *Wellington Donaldson and Henry Liebman*..... 301

Dairy Waste Elimination and Sewage Disposal. *H. A. Trebler, R. P. Ernsberger and C. T. Roland*..... 868
Discussion. *Christian L. Siebert*..... 887
Design of High-Rate Trickling Filters. *Karl Imhoff*..... 705
Developments in Sewage Sludge Incineration. *Mark B. Owen*..... 100
Digestion Experiments at Flint, Michigan, on Sewage Sludge, Garbage and Lime Sludge Mixtures. *Pierre W. Welch*... 247
Disposal of Packinghouse Waste. The Kuhner Packing Company, Muncie, Indiana. *Martin A. Milling and B. A. Poole*..... 738
Disposal of Sewage and Garbage—Related Municipal Functions, The—. *Morris M. Cohn*..... 81
Dow Chemical Company, The Phenolic Waste Treatment Plant of the—. *Ivan F. Harlow, Thomas J. Powers and Ralph B. Ehlers*.....1043

Effects of Activated Carbon in the Digestion of Fresh Solids—Activated Sludge Mixtures. *G. E. Flower, Chester B. Budd and Charles Hauck*..... 441
Experiences and Results of First Year of Operation of the Ann Arbor Sewage Treatment Plant. *Harland P. Dodge*.. 523

Experimental High-Rate Trickling Filters. *G. P. Edwards and G. O. Adams*..... 700
Experimental Work in Progress at the West Side Sewage Treatment Works of The Sanitary District of Chicago. *T. L. Herrick*..... 276

Financing Sewerage Projects in Pennsylvania Municipalities, Some of the Legal Aspects of—. *George F. Baer Appel*..... 839
Flint, Michigan, Digestion Experiments at—, on Sewage Sludge, Garbage and Lime Sludge Mixtures. *Pierre W. Welch*..... 247

Garbage
Digestion Experiments at Flint, Michigan, on Sewage Sludge, Garbage and Lime Sludge Mixtures. *Pierre W. Welch*..... 247
Disposal of Sewage and Garbage—Related Municipal Functions, The—. *Morris M. Cohn*..... 81
Growth Promoting Substances in Sewage and Sludge.
I. Review of Literature. *W. Rudolfs and Bernard Heinemann*..... 643
II. Indole and Skatole. *W. Rudolfs and R. S. Ingols*..... 653

Handling and Feeding of Chlorine at the Jamaica, N. Y., Screening Plant. *George E. Henkel*..... 311
Hazards and Safety Measures at Sewage Works. *Paul J. Houser*..... 731
High-Rate Trickling Filters.
Design of—. *Karl Imhoff*..... 705
Experimental—. *G. P. Edwards and G. O. Adams*..... 700
Joint Statement of Policy Involving Projects for Sewage Treatment Plants in Which High-Rate Filters are Used. *A. J. Chesley (M.D.) and C. A. Harper (M.D.)*..... 711
License Fees for High-Rate Filters. *Wm. Buckley*..... 713

Illinois River Below Peoria, The Pollution and Natural Purification of the—. *W. H. Wisely and Clarence W. Klassen*..... 569
Incineration
Developments in Sewage Sludge Incineration. *Mark B. Owen*..... 100
Indianapolis, Studies of Activated Sludge Oxidation at—. *Don E. Bloodgood*.... 26
Industrial Wastes
Dairy Waste Elimination and Sewage Disposal. *H. A. Trebler, R. P. Ernsberger and C. T. Roland*..... 868
Discussion. *Christian L. Siebert*..... 887
Disposal of Packinghouse Waste. The Kuhner Packing Co., Muncie., Ind. *Martin A. Milling and B. A. Poole*... 738
Phenolic Waste Treatment Plant of the Dow Chemical Co. *Ivan F. Harlow, Thomas J. Powers and Ralph B. Ehlers*.....1043
Practical Methods of Preventing Dairy Waste Nuisance. *Charles C. Agar*.... 115
Textile Waste Disposal. An Orderly Approach to the Problem. *L. L. Hedgepeth and C. B. Griffin*..... 534
Treatment of Sulfur Dye Waste by the Activated Sludge Process. *Henry J. Miles and Ralph Porges*..... 322
II. Further Studies of Optimum Operating Conditions. *Henry J. Miles and Ralph Porges*..... 856
Influence of Oxygen Concentration on B.O.D. *Richard Pomeroy*. Discussion by *W. Rudolfs and H. Heukelekian*... 465
Iowa City, Iowa. Sewage Treatment at—. *Earle L. Waterman*..... 106

Jackson, Michigan, Sewage Plant Operation *R. B. Jackson and R. A. Greene*.. 513
Jamaica, N. Y., Screening Plant, The Handling and Feeding of Chlorine at the—. *George E. Henkel*..... 311
Joint Statement of Policy Involving Projects for Sewage Treatment Plants in Which High-Rate Filters are Used. *A. J. Chesley (M.D.) and C. A. Harper (M.D.)*..... 711

Laboratories for Large Sewage Treatment Works, Recent—. *E. Hurwitz*..... 60
Laboratory Analyses and Studies in Plant Operation. *E. Hurwitz*..... 722
Legal Aspects of Sewer Rental Laws and Connections from Outside to City Sewer Systems. *Homer Buckley*..... 980
License Fees for High-Rate Filters. *Wm. Buckley*..... 713

Measures of Natural Oxidation in Polluted Streams. IV. Effect of Sewage on Atmospheric Reaeration Rates Under Stream Flow Conditions. *Robert W. Kehr*..... 228
Mechanical Surface Aeration, Résumé of Operating Experience of—. *S. E. Kappe*.....1007
Michigan, Sewer Rental Laws in—. *George H. Sandenburgh*..... 482
Modified Eijkman Medium for the Isolation of *Escherichia coli* from Sewage, A—. *A. A. Hajna and C. A. Perry*... 261

Natural Stream Purification as Applied to Practical Measures of Stream Pollution Control. *H. W. Streeter*..... 747
Neenah-Menasha (Wis.) Results of First Nine Months Operation at—. *J. M. Holderby*..... 975
New York State Requirements Relative to Qualifications of Sewage Treatment Plant Operators, Administration of—. *Anselmo F. Dappert*. Discussion by *W. J. Scott*..... 997

Pennsylvania Municipalities, Some Legal Aspects of Financing Sewerage Projects in—. *George F. Baer Appel*..... 839
Phenolic Waste Treatment Plant of the Dow Chemical Company, The—. *Ivan F. Harlow, Thomas J. Powers and Ralph B. Ehlers*.....1043
Pollution and Natural Purification of the Illinois River Below Peoria, The—. *W. H. Wisely and Clarence W. Klassen* 569

Practical Methods of Preventing Dairy Waste Nuisance. *Charles C. Agar*.... 115

Recent Laboratories for Large Sewage Treatment Works. *E. Hurwitz*..... 60
Research in Sewage Chemistry, Sewage Treatment and Stream Pollution. A Critical Review of the Literature of 1937. *Earle B. Phelps, Chairman*..... 173
Results of First Nine Months Operation at Neenah-Menasha (Wis.). *J. M. Holderby*..... 975
Résumé of Operating Experience of Mechanical Surface Aeration. *S. E. Kappe*. 1007
Rockville Centre, N. Y., Sludge Digestion and Inspection of Tanks at—. *C. G. Andersen*..... 494

Sewage
Chemical Treatment of—. *Philip B. Streander*..... 91
Growth Promoting Substances in Sewage and Sludge.
I. Review of Literature. *W. Rudolfs and Bernard Heinemann*..... 643
II. Indole and Skatole. *W. Rudolfs and R. S. Ingols*..... 653
Modified Eijkman Medium for the Isolation of *Escherichia coli* from—. *A. A. Hajna and C. A. Perry*..... 261
Solubility of Atmospheric Oxygen in—. *W. Allan Moore* 241
Sewage Chemistry, Research in—, Sewage Treatment and Stream Pollution. A Critical Review of the Literature of 1937. *Earle B. Phelps, Chairman*..... 173
Sewage Plant Operation, Jackson, Michigan. *R. B. Jackson and R. A. Greene*. 513
Sewage Purification, Studies of—. VIII. Observations on the Effect of Variations in the Initial Numbers of Bacteria and of the Dispersion of Sludge Flocs on the Course of Oxidation of Organic Matter by Bacteria in Pure Culture. *C. T. Butterfield and Elsie Wattie*..... 815
Sewage Sludge
Conditioning and Sale of Sludge for Fertilizer. *William A. Allen*..... 945
Developments in Sewage Sludge Incineration. *Mark B. Owen*..... 100
Digestion Experiments at Flint, Michigan, on Sewage Sludge, Garbage and Lime Sludge Mixtures. *Pierre W. Welch*..... 247
Growth Promoting Substances in Sewage and Sludge.
I. Review of Literature. *W. Rudolfs and Bernard Heinemann*..... 643
II. Indole and Skatole. *W. Rudolfs and R. S. Ingols*..... 653
Pseudo-Plastic Properties of Sewage Sludges. *W. D. Hatfield*.....3 and 272
Some Factors Affecting the Aerobic Decomposition of Sewage Sludge Deposits. *H. G. Baity*..... 539
Vacuum Filtration of Sludge. *LeRoy Van Kleeck*..... 949
Sewage Treatment
Biochemical Oxygen Demand Test and Oxidation in Sewage Treatment. *C. C. Ruchhoft*..... 264
Iowa City, Iowa. *Earle L. Waterman*... 106
Research in Sewage Chemistry, Sewage Treatment and Stream Pollution. A Critical Review of the Literature of 1937. *Earle B. Phelps, Chairman*..... 173
Sewage Works, Hazards and Safety Measures at—. *Paul J. Houser*..... 731
Sewer Rental Laws in Michigan. *George H. Sandenburgh*..... 482
Sewer Rental Laws, Legal Aspects of—, and Connections from Outside to City Sewer Systems. *Homer Buckley*..... 980
Sludge Digestion
Comparative Effects of Activated Carbon and Lime on Sludge Digestion. *C. E. Keefer and Herman Kratz, Jr.*... 33
Digestion Experiments at Flint, Michigan, on Sewage Sludge, Garbage and Lime Sludge Mixtures. *Pierre W. Welch*..... 247
Effects of Activated Carbon in the Digestion of Fresh Solids—Activated Sludge Mixtures. *G. E. Flower, Chester B. Budd and Charles Hauck*..... 441
Sludge Digestion and Inspection of Tanks at Rockville Centre, N. Y. *C. G. Andersen*..... 494
Utilization of Sludge Digestion Gases at the Coney Island Sewage Treatment Works. *Wellington Donaldson and Henry Liebman*..... 301
Sludge Drying on Glass-Covered Beds. *G. E. Flower, Chester B. Budd and Charles Hauck*..... 714
Sludge Drying on Open and Covered Drying Beds. *Lewis V. Carpenter*.... 503
Solubility of Atmospheric Oxygen in Sewage, The—. *W. Allan Moore*..... 241
Some Factors Affecting the Aerobic Decomposition of Sewage Sludge Deposits. *H. G. Baity*..... 539
Some of the Legal Aspects of Financing Sewerage Projects in Pennsylvania Municipalities. *George F. Baer Appel*. 839
Stream Pollution
Measures of Natural Oxidation in Polluted Streams. IV. Effect of Sewage on Atmospheric Reaeration Rates Under Stream Flow Conditions. *Robert W. Kehr*..... 228
Natural Stream Purification as Applied to Practical Measures of Stream Pollution Control. *H. W. Streeter*..... 747
Pollution and Natural Purification of the Illinois River Below Peoria. *W. H. Wisely and Clarence W. Klassen*..... 569
Research in Sewage Chemistry, Sewage Treatment and Stream Pollution. A Critical Review of the Literature of 1937. *Earle B. Phelps, Chairman*..... 173
Some Factors Affecting the Aerobic Decomposition of Sewage Sludge Deposits. *H. G. Baity*..... 539
Studies of Activated Sludge Oxidation at Indianapolis. *Don E. Bloodgood*..... 26
Studies of Sewage Purification
VII. Biochemical Oxidation by Activated Sludge. *C. C. Ruchhoft, P. D. McNamee and C. I. Butterfield*..... 661
VIII. Observations on the Effect of Variations in the Initial Numbers of Bacteria and of the Dispersion of Sludge

Flocs on the Course of Oxidation of Organic Matter by Bacteria in Pure Culture. *C. T. Butterfield and Elsie Wattie*..... 815
Studies on the Clarification Stage of the Activated Sludge Process.
IV. Preliminary Notes on the Clarifying Organisms in Activated Sludge. *H. Heukelekian and H. B. Schulhoff* 43
V. Ammonia Uptake. *R. S. Ingols*... 49
VI. Hydrolysis of Starch by Activated Sludge. *H. Heukelekian and R. S. Ingols*..... 209
VII. Hydrolysis and Bacterial Utilization of Complex Nitrogenous Materials by Activated Sludge. *H. Heukelekian and R. S. Ingols*..... 219
VIII. Uptake of Soluble Organic Substances. *Robert S. Ingols*..... 458
Study of Trickling Filter Loadings. *O. J. Knechtges*..... 936

Textile Waste Disposal. An Orderly Approach to the Problem. *L. L. Hedgepeth and C. B. Griffin*..... 534
Treatment of Sulfur Dye Waste by the Activated Sludge Process. *Henry J. Miles and Ralph Porges*..... 322
II. Further Studies of Optimum Operating Conditions. *Henry J. Miles and Ralph Porges*..... 856
Trickling Filter Loadings, A Study of—. *O. J. Knechtges*..... 936

Use of Hydrated Lime in the Activated Sludge Process, The—. *T. R. Haseltine*1017
Utilization of Sludge Digestion Gases at the Coney Island Sewage Treatment Works. *Wellington Donaldson and Henry Liebman*..... 301

Vacuum Filtration of Sludge. *LeRoy Van Kleeck*..... 949
Viscosity or Pseudo-Plastic Properties of Sewage Sludges, The—. *W. D. Hatfield* 3
II..... 272

OPERATORS' REPORTS AND SUGGESTIONS

Annual Report of Sewage Disposal, Board of Public Works and Sanitation, Indianapolis, Ind., 1936. *C. K. Calvert and D. E. Bloodgood*..... 137
Annual Report of the Superintendent of the Sewage Treatment Plant of the City of New Britain, Conn., for the Year Ending March 31, 1938. *John R. Szymanski*..... 770
Annual Report, Worcester Sewage Treatment Works. 1937-38. *John H. Brooks*.....1075
Apparatus for Making Dilutions for B.O.D. Determinations, An—. B. O. Dette. *C. C. Larson*..... 135
Automatic Shut-Off for Gas Still (Used for Volatile Acids or Nitrogen Distillations). *J. R. Snell*..... 890

B. O. Dette. An Apparatus for Making Dilutions for B.O.D. Determinations. *C. C. Larson*..... 135
B.O.D. Table Tops. *Harry Kramer*..... 342

Combined Sludge Grinder and Loader. *Wm. W. Watkins*..... 132
Cork Boring Gadget. *W. A. Sperry*..... 342

DeKalb Sanitary District, DeKalb, Illinois. *Donald E. Henn*..... 596
Dry Sludge Removing Equipment. *C. G. Anderson*..... 133

Electrical Glass Cutter. *Edward P. Baillie* 137
Elizabeth, N. J., Joint Meeting Sewage Treatment Plant. First Report. *Leslie E. West*.....1067
Experience with Paints at the Marina Sewage Pumping Plant. *Joseph Corrao* 899

Gadgets
Automatic Shut-off for Gas Still (Used for Volatile Acids or Nitrogen Distillations). *J. R. Snell*..... 890
B. O. Dette. An Apparatus for Making Dilutions for B.O.D. Determinations. *C. C. Larson*..... 135
B.O.D. Table Tops. *Harry Kramer*..... 342
Combined Sludge Grinder and Loader. *Wm. W. Watkins*..... 132
Cork Boring Gadget. *W. A. Sperry*.... 342
Dry Sludge Removing Equipment. *C. G. Anderson*..... 133
Electrical Glass Cutter. *Edward P. Baillie*..... 137
Metal Container for Settleable Solids Tube. *Don Bloodgood*..... 341
Periscope. *W. A. Sperry*..... 341
Sewage Flow Velocity Meter. *Isadore J. DuBois*..... 340
Sludge Sampler Operating Instructions. *George Martin*..... 134
Thermometer Gadget for Use in Digesters. *W. A. Sperry*..... 895
Geneva, N. Y. Gulvin Park Sewage Treatment Plant. *Elvey A. Marshall*..... 756
Glass Cutter, Electrical—. *Edward P. Baillie*..... 137
Gulvin Park Sewage Treatment Plant, Geneva, New York. *Elvey A. Marshall* 756

Imhoff Tanks, Operation of—. *Channel Samson*..... 143
Indianapolis, Ind., 1936 Annual Report of Sewage Disposal, Board of Public Works and Sanitation, City of—. *C. K. Calvert and D. E. Bloodgood*..... 137
Intermittent Sand Filtration. From "The Digester." *W. H. Wisely*.....1065

Laguna Beach Sewage Disposal Plant, Operating Results at the—. *R. D. Woodward*..... 893

Maintenance of Pumping Stations and Force Mains. *John V. Lewis*..... 343
Discussion. *Wm. A. Ryan*..... 346
Marina Sewage Pumping Plant, Experience with Paints at the—). *Joseph Corrao*..... 899
Metal Container for Settleable Solids Tube. *Don Bloodgood*..... 341
Mineola Sewage Treatment Plant. *Frank H. Hall*..... 602

New Britain, Conn., Annual Report of the Superintendent of the Sewage Treatment Plant of the—, for the Year Ending March 31, 1938. *John R. Szymanski* 770
New York State, Qualifications Prescribed for Sewage Treatment Plant Operators in—. *Anselmo F. Dappert* 336
New York State Sewage Works Association's Annual Operator's Award to Elvey A. Marshall. *S. T. Barker* 754

Operating Results at the Laguna Beach Sewage Disposal Plant. *R. D. Woodward* 893
Operation of Covered Sludge Beds. *Elvey A. Marshall* 158
Operation of Imhoff Tanks. *Channel Samson* 143
Operation of Open Sludge Beds. *William A. Ryan* 153
Operator's Award to Elvey A. Marshall, Presentation of the New York State Sewage Works Association's—. *S. T. Barker* 754

Paint Pointers. *Carl F. Tennant* 897
Periscope. *W. A. Sperry* 341
Primary Sludge Pumping. Edited by *W. H. Wisely* 891

Qualifications Prescribed for Sewage Treatment Plant Operators in New York State. *Anselmo F. Dappert* 336

Rahway Valley, New Jersey, Joint Meeting Sewage Treatment Works. *Norman C. Wittwer* 606

Separate Sludge Digestion in Heated Tanks. *Herbert O. Johnson* 149
Separate Sludge Digestion Without Heat. *L. R. Smith* 146
Sewage Flow Velocity Meter. *Isadore J. DuBois* 340
Sewage Plant, Starting a New—. *Frank W. Jones* 1060
Sewage Treatment Plant. First Report, Elizabeth, N. J., Joint Meeting—. *Leslie E. West* 1067
Sludge Beds
  Covered. *Elvey A. Marshall* 158
  Open. *William Ryan* 153
Sludge Digestion
  In Heated Tanks. *Herbert O. Johnson* 149
  Without Heat. *L. R. Smith* 146
Sludge Grinder and Loader, Combined—. *Wm. W. Watkins* 132
Sludge Pumping, Primary—. Edited by *W. H. Wisely* 891
Sludge Sampler Operating Instructions. *George Martin* 134
Springfield Sanitary District, Springfield, Ill. *C. C. Larson* 781
Starting a New Sewage Plant. *Frank W. Jones* 1060

Thermometer Gadget for Use in Digesters. *Walter A. Sperry* 895

Vacuum Scum Breaker for Imhoff Tank Gas Vents. *Wm. M. Foley* 132

Worcester Sewage Treatment Works. Annual Report, 1937–38. *John H. Brooks* 1075

EDITORIALS

Anniversary Book 909
Are Industrial Wastes Liabilities? 161
Chicago Program Nears Completion 1083
Nine-Year Index 908
Nitrification 792
Oxygen Demand of Sludge Deposits 613
Sewage and the Natural Resources Committee 347

PROCEEDINGS OF LOCAL ASSOCIATIONS

Arizona Sewage and Water Works Association.
  Twelfth Annual Conference 796
California Sewage Works Association
  Tenth Annual Spring Conference 794
  Eleventh Annual Convention 1085
Central States Sewage Works Association.
  Eleventh Annual Meeting 1092
Federation of Sewage Works Associations.
  Minutes of Annual Meeting, Jan., 1938. 359
  Report of Secretary-Treasurer, Year Ending, Dec. 31, 1937 364
  Officers of Local Associations 381
  Members of Federation 385
  Non-Association Subscribers to Journal 430
Federation Research Committee Report 620
Iowa Sewage Treatment Conference.
  Nineteenth Annual Meeting 357
Kansas Water and Sewage Works Association.
  Eleventh Annual Meeting 618
Maryland-Delaware Water and Sewerage Association.
  Twelfth Annual Conference 911
Michigan Sewage Works Association.
  Thirteenth Annual Conference 619
New York State Sewage Works Association.
  Tenth Annual Meeting 349
  First Decade of the Association 352
  Spring Meeting 799
  Joint Meeting with New England Sewage Works Association 1089
Ohio Conference on Sewage Treatment.
  Eleventh Annual Conference 355
  Twelfth Annual Conference 1087
Pacific Northwest Sewage Works Association.
  Second Annual Meeting 796
  First Short School 1091
Pennsylvania Sewage Works Association.
  Twelfth Annual Conference 910
Texas Water and Sewage Short School.
  Twentieth Annual Meeting 615

REVIEWS AND ABSTRACTS

Activated Sludge
  Aeration Tanks for Activated Sludge Plants. *S. W. Freese* 375
Aerated Filters, Enclosed—. *J. Hurley and M. E. D. Windridge* 804
Aeration Tanks for Activated Sludge Plants. *S. W. Freese* 375

Annual Report, 1937–38, Glasgow Sewage Purification Works. *Alexander Hunter*. 1098
Annual Report of the Ruhrerband for 1937. *Max Prüss*. 1100

Birmingham, Tame and Rea District Drainage Board, The Design and Operation of the Coleshill Sewage Disposal Works of the—. *Frank C. Vokes*. 631
B.O.D. of Industrial Wastes. *E. F. Eldridge*. 913

Coleshill Sewage Disposal Works of the Birmingham, Tame and Rea District Drainage Board. The Design and Operation of the—. *Frank C. Vokes*. 631
Concrete and Its Uses in Sewage Disposal Works. *Richard H. Osler*. 164
Constant Velocity Detritus Channels. Recent Developments in Details of Design. *L. L. Escritt*. 1101
Continuation of the Study of Beet Sugar Factory Waste Treatment. *E. F. Eldridge*. 913

Delaware River and Its Tributaries, Notice Concerning the Correction and Control of Pollution of the—. 919
Delaware River Basin, The Interstate Commission on the—. 918, 919
Design and Operation of the Coleshill Sewage Disposal Works of the Birmingham, Tame and Rea District Drainage Board. *Frank C. Vokes*. 631
Determination of Dissolved Nitrogen in Water. *Norris W. Rakestraw and Victor M. Emmel*. 167
Determination of Oxygen in Water in the Presence of Nitrite. *H. J. Brandt*. 377
Detritus Channels, Constant Velocity—. Recent Developments in Details of Design. *L. L. Escritt*. 1101
Detritus Dump, The Elimination of the—. *C. B. Townend*. 369
Detroit, Mich., Sewage Treatment Project, Grit Chamber Model Tests for—. *George E. Hubbell*. 372

Effect of Discharge of Crude Sewage into the Estuary of the River Mersey on the Amount and Hardness of the Deposit in the Estuary. 802
Efficiency of Humus Settling Tanks. *P. G. Lloyd*. 163
Elimination of the Detritus Dump. *C. B. Townend*. 369
Enclosed Aerated Filters. *J. Hurley and M. E. D. Windridge*. 804
Experiences with Special Cannery Wastes (Beets, Tomatoes and Squash). *E. F. Eldridge*. 914
Experimental Rapid Filtration at Huddersfield. *H. H. Goldthorpe*. 622

Filter Pressing of Sludge. *J. T. Thompson and J. W. Procter*. 633

Glasgow, Scotland, Sewage Purification Department. 1894–1937. *Alexander Hunter*. 917
Glasgow Sewage Purification Works. Annual Report, 1937–38. *Alexander Hunter*. 1098
Grit Chamber Model Tests for Detroit, Mich., Sewage Treatment Project. *George E. Hubbell*. 372

Huddersfield, Experimental Rapid Filtration at—. *H. H. Goldthorpe*. 622

Industrial Wastes
B.O.D. of Industrial Wastes. *E. F. Eldridge*. 913
Continuation of the Study of Beet Sugar Factory Waste Treatment. *E. F. Eldridge*. 913
Experiences with Special Cannery Wastes (Beets, Tomatoes and Squash). *E. F. Eldridge*. 914
Pollution of Streams by Coal Mine Drainage. *Willard W. Hodge*. 168
Progress Made in Michigan in the Elimination of Stream Pollution by Industrial Wastes Since 1929. *L. F. Oeming*. 915
Treatment of Rayon Boil-Off Waste. *Foster Dee Snell*. 166
Interstate Commission on the Delaware River Basin, The—. 918, 919

Multi-Stage Sewage Sludge Digestion. *A. M. Rawn, A. Perry Banta and Richard Pomeroy*. 625
Discussion. *W. Rudolfs, and H. Heukelekian, and H. Bach*. 630

Nitrogen, The Determination of Dissolved— in Water. *Norris W. Rakestraw and Victor M. Emmel*. 167
Notice Concerning the Correction and Control of Pollution of the Delaware River and Its Tributaries. 919

Occurrence of Dilute Sewage and Its Rational Treatment. *H. C. Shenton*. 163
Oxygen, Determination of—, in Water in the Presence of Nitrite. *H. J. Brandt*. 377

Percolation Filters, Ventilation of—. *E. J. Hamlin and H. Wilson*. 368
Pollution of Streams by Coal Mine Drainage. *Willard W. Hodge*. 168
Progress Made in Michigan in the Elimination of Stream Pollution by Industrial Wastes Since 1929. *L. F. Oeming*. 915

References to Sewage Literature. 170, 808
River Tees, Survey of the—. Part III. The Non-Tidal Reaches—Chemical and Biological. *R. W. Butcher, J. Longwell and F. T. K. Pentelow*. 638
Ruhrverband, Annual Report of the—, for 1937. *Max Prüss*. 1100

Settling Tanks, Efficiency of Humus—. *P. G. Lloyd*. 163
Sewage
Occurrence of Dilute Sewage and Its Rational Treatment. *H. C. Shenton*. 163
Sewage Disposal Works
Concrete and Its Uses in Sewage Disposal Works. *Richard H. Osler*. 164
Design and Operation of the Coleshill Sewage-Disposal Works of the Birmingham, Tame and Rea District

Drainage Board. *Frank C. Vokes*.... 631
Some Factors Affecting the Design of Sewage Disposal Works. *John Hurley*.1096
Southampton's New Sewerage and Sewage Disposal Works. *Anonymous*.... 165
Sewage Purification Department, Glasgow, Scotland. 1894–1937. *Alexander Hunter*..... 917
Sewage Sludge Banks, Stabilization of—. *Willem Rudolfs*..... 636

Sludge Digestion
Multiple-Stage Sewage Sludge Diestion. *A. M. Rawn, A. Perry Banta and Richard Pomeroy*..... 625
Discussion. *W. Rudolfs and H. Heukelekian, and H. Bach*..... 630
Sludge Digestion Tanks. Methods and Principles Used in Design. *L. L. Escritt*.....1102
Standard Practice in Separate Sludge Digestion. *H. E. Schlenz*..... 373
Sludge, Filter Pressing of—. *J. T. Thompson and J. W. Procter*..... 633
Some Factors Affecting the Design of Sewage Disposal Works. *John Hurley*.1096
Southampton's New Sewerage and Sewage Disposal Works. *Anonymous*..... 165
Stabilization of Sewage Sludge Banks. *Willem Rudolfs*..... 636
Standard Practice in Separate Sludge Digestion. *H. E. Schlenz*..... 373
Storm Water Overflow Chamber. *G. Holden*..... 801
Stream Pollution
Effect of Discharge of Crude Sewage into the Estuary of the River Mersey on the Amount and Hardness of the Deposit in the Estuary..... 802
Interstate Commission on the Delaware River Basin.....918, 919
Notice Concerning the Correction and Control of Pollution of the Delaware River and Its Tributaries..... 919
Pollution of Streams by Coal Mine Drainage. *Willard W. Hodge*..... 168
Progress Made in Michigan in the Elimination of Stream Pollution by Industrial Wastes Since 1929. *L. F. Oeming*. 915
Survey of the River Tees. Part III. The Non-Tidal Reaches—Chemical and Biological. *R. W. Butcher, J. Longwell and F. T. K. Pentelow*..... 638

Treatment of Rayon Boil-Off Waste. *Foster Dee Snell*..... 166

Ventilation of Percolation Filters. *E. J. Hamlin and H. Wilson*..... 368

West Riding of Yorkshire Rivers Board. Forty-Third Report, Year Ending, March 31, 1938. *John Garner*.....1094